

**OAB Construction Complete.** The Optics Assembly Building (OAB), a cleanroom facility with Class 100 to Class 10,000 areas, has been completed. Line replaceable units (LRUs), which are large, optomechanical assemblies that will populate the 192 beamlines of the National Ignition Facility (NIF), will be assembled in the Class 100 area. Other areas will house the mechanical parts cleaners and optics transfer equipment. Installation of the special assembly, handling, and cleaning equipment required to produce LRUs began in January. The ultrasonic large-parts mechanical cleaner, shown below, is the largest of its type in the world.



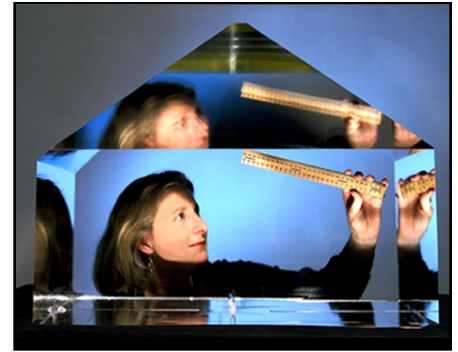
An ultrasonic large-parts mechanical cleaner in the OAB.

### SEAB Task Force Supports Completion of NIF.

The Secretary of Energy Advisory Board's (SEAB) task force says in its interim report Jan. 10, 2000, that it has found no "technical or managerial obstacles" that would prevent completion of the NIF project. The task force, however, points out that there are serious challenges in project management, beampath integration and cleanliness, and optics. But with "appropriate corrective actions, a strong management team, additional funds, an extension of the schedule, and recognition that NIF is, at its core, a research and development project," the task force believes the project can be completed.

The task force recommends spending more money to solve technical challenges and raising NIF's contingency fund to 30–35% instead of the approved 15%. It also urges that the project include clearly defined roles and lines of authority, an external review, design robustness, integration of research and development efforts with project management, and a phased approach in reaching NIF's performance goals (operating as 96 beams initially and then as 192 beams).

**NIF Grows Largest KDP Crystal Yet.** The largest KDP (potassium dihydrogen phosphate) crystal ever produced by rapid growth was completed at Lawrence Livermore National Laboratory in January. A salt trans-fusion during the 52-day growth period brought about the record-breaking size of the crystal boule. The 320-kg crystal is expected to yield as many as 14 doubler plates, a record from a single boule. One hundred ninety-two doubler plates are required in the NIF to convert infrared to ultra-violet light. Completion of this crystal marks the one-third point for planned NIF KDP doubler production.

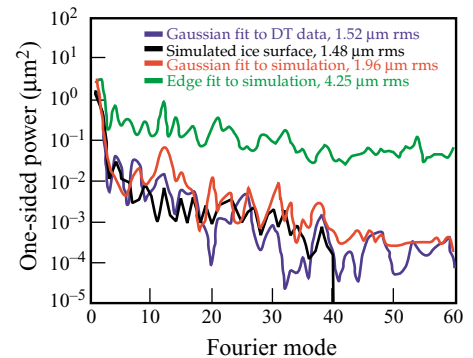


This record-size KDP crystal was grown in only 52 days.

### Smoother Ice Surfaces Inside NIF Capsules Will Aid Ignition.

Deuterium tritium (DT) ice-layer surfaces inside cryogenic NIF target layers are smoother than once believed; consequently, they will have smaller amplitude perturbations when imploded—providing more margin for NIF ignition. Recently, a backlit image of a cryogenic target capsule was analyzed using a Gaussian fit to define the internal ice surface position relative to the outside of the capsule. SHELL3D ray trace simulations, using a two-dimensionally bumpy mathematical ice surface with the same power spectrum as the analyzed experimental data, showed that the Gaussian fit correctly reproduced the ice-surface power spectrum and total rms deviation (<30% error in the rms).

The previously used edge fit produced errors as large as 1–2 orders of magnitude in the power spectrum and more than a factor of 2 in the rms. These results are being included for baselining ICF ignition target design and fabrication.



Comparison of Gaussian and edge fit to simulated ice surface.